

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

**US4585572**

Biblio

Desc

Claims



## Reversible phase change composition for storing thermal energy

Patent Number: ☐ [US4585572](#)Publication  
date: 1986-04-29

Inventor(s): LANE GEORGE A (US); TEOT ARTHUR S (US); ROSSOW HAROLD E (US)

Applicant(s): DOW CHEMICAL CO (US)

Requested  
Patent: IL73138Application  
Number: US19830540726 19831011Priority Number  
(s): US19830540726 19831011IPC  
Classification: C09K3/18EC  
Classification: C09K5/06BEquivalents: AU3405484, AU551906, CA1242577, DE3465204D, ☐ [DK164112B](#), DK164112C,  
☐ [DK487284](#), ☐ [EP0142028](#), B1, ☐ [ES8802070](#), IN161738, JP1034550B, JP1550769C,  
☐ [JP60101167](#), KR8601895, NO160789B, NO160789C, NO844057, NZ209739, ZA8407844

### Abstract

A reversible liquid/solid phase change composition for storing thermal energy. The composition comprises at least one hydrated inorganic salt selected from a salt or mixture of salts that are subject to segregation of its chemical components during repeated freezing and thawing cycles, and a surface active thickening agent in the form of a cationic surfactant and selected from an amine, salts of the amine, or a quaternary ammonium salt of the amine, wherein the thickening agent is present in the hydrated salt in an amount sufficient to form a micelle structure throughout the hydrated salt to prevent such segregation.

Data supplied from the esp@cenet database - I2

73138	מספר: Number
2 X 1984	תאריך: Date
הוקדם/נדחה Ante/Post-dated	

50874/84

(שם המבקש, מענו ולגבי גוף מאגד - מקום התאגדותו)  
(Name and address of applicant, and in case of body corporate-place of incorporation)

THE DOW CHEMICAL COMPANY,  
a Delaware Corporation,  
of 2030 Dow Center,  
Abbott Road,  
Midland, Michigan 48640,  
U. S. A.

8005

העברה מאת הממציאים  
על אמצאה מכח  
of an invention the title of which is assignment by the inventors  
Owner, by virtue of

1. George A. Lane 2) Arthur S. Teot 3) Harold E. Rossow

הערוכה בעלת חילוף פזה הניתן להפיכה לאחסון אנרגיה חרמית.

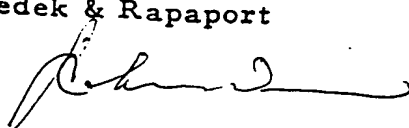
בעברית  
(Hebrew)

REVERSIBLE PHASE CHANGE COMPOSITION FOR STORING THERMAL  
ENERGY

(באנגלית)  
(English)

hereby apply for a patent to be granted to me in respect thereof.

נבקש בזאת כי ינתן לי עליה פטנט

• בקשת חלוקה • Application of Division		• בקשת פטנט מוסף • Application for Patent Addition		• דרישה דין קדימה • Priority Claim		
מבקשת פטנט from Application	לבקשה/לפטנט to Patent/Appl.	מספר/סימן Number/Mark	תאריך Date	מדינת האגוד Convention Country		
No. .... dated .....	No. .... dated .....	540, 726	11. 10. 1983	U. S. A.		
• יפוי כח: כללי / מיוחד - רצוף בזה / עוד יגש P.O.A.: <del>individual-attached/technical</del> הוגש בענין ..... המען למסירת מסמכים בישראל Address for Service in Israel Cohen Zedek & Rapaport P.O. Box 33116 Tel Aviv		1984 October 1st of the year of This				
חתימת המבקש Signature of Applicant Cohen Zedek & Rapaport 		לשימוש הלשכה For Office Use				
BY:		Publication Sealing				

1. A thermal energy storage material comprising at least one hydrated inorganic salt having a phase change transition temperature in the range of from greater than 0°C to 140°C, wherein said hydrated inorganic salt or mixture of salts undergoes segregation of its chemical components during repeated cycles of freezing and thawing, and a surface active thickening agent in the form of a cationic surfactant and used in an amount sufficient to form a micelle structure throughout the storage material to prevent said segregation.

2. The storage material of Claim 1, wherein said surfactant is selected from the group consisting of: (a) an amine corresponding to the formula



$R_1$  is at least about a  $C_{16}$  aliphatic group which may be branched or straight chained and which may be saturated or unsaturated;